

Listing of the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Original) A composition for transfecting a cell which comprises one or more nucleic acid molecules, one or more peptides or proteins, and one or more transfection agents.
2. (Currently amended) The composition of claim 1, wherein said composition comprises two or more peptides, ~~and/or~~ proteins or both.
3. (Original) The composition of claim 1, wherein said composition comprises two or more transfection agents.
4. (Original) The composition of claim 1, wherein said composition comprises a peptide- or protein-nucleic acid complex.
5. (Original) The composition of claim 4, wherein said peptide- or protein-nucleic acid complex comprises two or more peptides, or proteins or both.
6. (Original) The composition of claim 1, wherein said transfection agent comprises one or more cationic lipids.
7. (Original) The composition of claim 6, wherein said transfection agent further comprises one or more neutral lipids.
8. Cancelled
9. Cancelled
10. (Original) The composition of claim 6, wherein said cationic lipids comprise one or more monovalent cationic lipids.
11. (Original) The composition of claim 10, wherein said monovalent cationic lipids are selected from the group consisting of DOTMA, DOTAP, DMRIE, and DDAB.

12. (Original) The composition of claim 6, wherein said cationic lipids comprise one or more polyvalent cationic lipids.
13. (Original) The composition of claim 12, wherein said polyvalent cationic lipids are selected from the group consisting of DOSPA, DOSPER, DOGS, TMTPS, TMTOS, TMTLS, TMTMS, and TMDOS.
14. (Original) The composition of claim 7, wherein said neutral lipids are selected from the group consisting of DOPE, DPhPE, and cholesterol.
15. Cancelled
16. (Currently amended) The composition of claim 1, wherein one or more of said transfection agents are covalently linked to one or more of said peptides, ~~and/or~~ proteins or both.
17. (Currently amended) The composition of claim 6, wherein one or more of said cationic lipids are covalently linked to one or more of said peptides, ~~and/or~~ proteins or both.
18. (Currently amended) The composition of claim 7, wherein one or more of said neutral lipids are covalently linked to one or more of said peptides ~~and/or~~ proteins or both.
19. Cancelled
20. (Currently amended) The composition of claim 1, wherein said peptides, ~~and/or~~ proteins or both are derived from animal, bacterial, viral peptides, ~~and/or~~ proteins.
21. (Currently amended) The composition of claim 1, wherein said peptides, ~~and/or~~ proteins or both are conjugated to one or more nucleic acid binding groups.
22. (Original) The composition of claim 21, wherein said nucleic acid binding groups comprise at least one polyamine.

23. (Original) The composition of claim 22, wherein said nucleic acid binding group comprises at least one spermine.
24. (Currently amended) The composition of claim 1, wherein at least one of said ~~peptide and/or protein~~ one or more peptides or proteins is a nuclear localization protein or peptide.
25. (Currently amended) The composition of claim 1, wherein at least one of said ~~peptide and/or protein~~ one or more peptides or proteins is a fusagenic peptide or protein.
26. (Currently amended) The composition of claim 1, wherein at least one of said ~~peptide and/or protein~~ one or more peptides or proteins is a receptor-ligand peptide or protein.
27. (Currently amended) The composition of claim 1, wherein at least one of said ~~peptide and/or protein~~ one or more peptides or proteins is a transport peptide or protein.
28. (Currently amended) The composition of claim 20, wherein at least one of said ~~peptide and/or protein~~ one or more peptides or proteins is a viral peptide or protein.
29. (Original) The composition of claim 28, wherein said virus is selected from the group consisting of an influenza virus, a vesicular stomatitis virus, an adenovirus, an alphavirus, a Semliki Forest Virus, a hepatitis virus, a herpes virus, an HIV virus, and a simian virus.
30. (Original) The composition of claim 1, further comprising DEAE-dextran, chloroquine or combinations thereof.
31. (Currently amended) The composition of claim 1, wherein at least one of said ~~peptide and/or protein~~ one or more peptides or proteins is selected from the group consisting of an insulin, a transferrin, ~~a epidermal~~ an epidermal growth factor, a fibroblast growth factor, a lactoferrin, a fibronectin, an adenovirus penton

base, Knob, and hexon protein, a vesicular stomatitis virus glycoprotein, a Semliki Forest Virus core protein, ~~a~~ an influenza hemagglutinin, a hepatitis B core protein, an HIV Tat protein, a herpes simplex virus VP22 protein, a histone protein, a high mobility group protein, ~~and an~~ an invasin protein, ~~and an~~ an internalin protein, an endotoxin, a diphtheria toxin, a shigella toxin, a melittin, a magainin, a gramicidin, a cecrophin, a ~~defensins~~ defensin, a ~~protegrins~~ protegrin, a ~~tachyplesins~~ tachyplesin, a ~~thionins~~ thionin, a ~~indolicidin~~ an indolicidin, a battenecin, a drosomycin, a ~~apidaecins~~ an apidaecin, a cathelicidin, a ~~bacteriacidal-permeability~~ bactericidal-permeability-increasing protein, a nisin, ~~and~~ a buforin, and fragments thereof.

32. (Original) The composition of claim 1, wherein said composition is capable of transfecting a primary cell culture, a passaged cell culture or a cell line.
33. (Original) The composition of claim 32, wherein said cell line is a human cell line.
34. (Original) The composition of claim 32, wherein said cell line is an animal cell line.
35. (Original) The composition of claim 32, wherein said cell line is a fibroblast.
36. (Currently amended) The composition of claim 1, wherein at least one of said ~~peptides and/or proteins~~ peptides or proteins comprise multimers of the same or different peptides or proteins.
37. (Currently amended) The composition of claim 1, wherein said ~~peptide and/or protein~~ peptides or proteins comprise one or more amino acid derivatives or analogues.
38. (Currently amended) The composition of claim 1, wherein at least one of said ~~peptides and/or proteins~~ peptides or proteins comprises two or more functions selected from the group consisting of fusagenic, nuclear localization, transport, receptor-ligand and cell adhesion.

39. (Original) A pharmaceutical composition comprising an amount of the composition of claim 1 effective for transfection of a targeted cell or tissue and a pharmaceutical carrier.
40. (Original) A therapeutic composition comprising an amount of the composition of claim 1 effective for transfection of a targeted cell or tissue with a selected therapeutic nucleic acid.
41. (Original) A diagnostic composition comprising an amount of the composition of claim 1 effective for transfection of a targeted cell or tissue with a selected diagnostic nucleic acid.
42. (Original) A composition for transfecting a cell which comprises a component of transfection agent covalently linked to a peptide or protein.
43. (Currently amended) The composition of claim 42₁ wherein the said component of a transfection agent is a lipid.
44. (Currently amended) The composition of claim 42₁ wherein the said component of a transfection agent is a cationic lipid.
45. (Currently amended) The composition of claim 42₁ wherein the said component of a transfection agent is a neutral lipid.
46. Cancelled
47. (Currently amended) The composition of claim 42₁ further comprising a receptor-ligand protein.
48. (Original) A composition for transfecting a cell obtained by combining one or more nucleic acid molecules, one or more peptides or proteins, and one or more transfection agents.
49. (Currently amended) A The composition for transfecting a cell of claim 48₁ obtained by first forming a peptide- or protein-nucleic acid complex followed by

addition of a transfection agent capable of aggregating the peptide-or protein-nucleic acid complex.

50. (Currently amended) The composition of claim 49₁ wherein after the peptide-or protein- nucleic acid complex is formed, said complex is added to a mixture of a cationic lipid and a neutral lipid.
51. (Original)A method for transfecting a cell with a nucleic acid, the method comprising the step of contacting the cell with the transfection composition of claim 1.
52. (Original)A method for transfecting a cell with a nucleic acid, the method comprising the step of contacting the cell with the transfection composition of claim 17.
53. (Original)A method for transfecting a cell with a nucleic acid, the method comprising the step of contacting the cell with the transfection composition of claim 31.
54. (Original)A method for transfecting a cell with a nucleic acid, the method comprising the step of contacting the cell with the transfection composition of claim 48.
55. (Original)A method for transfecting a cell with a nucleic acid, the method comprising the steps:
 - (a) admixing one or more peptides or proteins with a nucleic acid to form a peptide-nucleic acid complex or a protein-nucleic acid complex;
 - (b) adding a transfection agent to the complex from step (a) to obtain an aggregate of the transfection agent and said complex; and
 - (c) contacting said cell with the aggregate from step (b).
56. (Currently amended) The method of claim 55₁ wherein the one or more peptides or proteins ~~comprises~~ comprise a sub-cellular localization signal sequence, a

nuclear localization signal sequence, a fusagenic sequence, a transport or trafficking sequence, a receptor-ligand sequence or a cell adhesion sequence.

57. (Currently amended) The method of claim 56, wherein the peptide or protein is modified by covalent bonding to a nucleic acid-binding group.
58. (Currently amended) The method of claim 57, wherein the nucleic acid-binding group is a spermine.
59. Cancelled
60. Cancelled
61. Cancelled
62. Cancelled
63. Cancelled
64. (Original) A transfection reagent kit which comprises a transfection agent and a peptide or protein or a modified peptide or protein capable of enhancing transfection of the transfection agent.
65. (Currently amended) The kit of claim 64, which comprises a cationic lipid transfection agent.
66. (Currently amended) The kit of claim 65, wherein the cationic lipid transfection agent is selected from the group consisting of "LIPOFECTAMINE", "LIPOFECTIN", "LIPOFECTACE", "CELLFECTIN", "MULTIFECTOR", ~~or~~ and "TRANSFECTIN".
67. Cancelled
68. Cancelled
69. Cancelled

- 70. Cancelled
- 71. (Currently amended) A The kit of claim 64, that is a diagnostic kit and which further comprises a diagnostic nucleic acid.
- 72. Cancelled
- 73. Cancelled
- 74. Cancelled
- 75. Cancelled
- 76. Cancelled
- 77. Cancelled
- 78. (New) The composition of claim 1, wherein said one or more nucleic acid molecules are DNA molecules.
- 79. (New) The composition of claim 1, wherein said one or more nucleic acid molecules are RNA molecules.
- 80. (New) The composition of claim 1, wherein said one or more nucleic acid molecules are selected from the group consisting of antisense or antigene nucleic acids, ribozymes, RNA regulatory sequences, inhibitory nucleic acids and regulatory nucleic acids.
- 81. (New) The composition of claim 1, wherein said one or more nucleic acid molecules are diagnostic nucleic acids.
- 82. (New) The composition of claim 1, wherein said one or more nucleic acids are therapeutic nucleic acids.

83. (New) The composition of claim 1, wherein said one or more nucleic acids are selected from the group of nucleic acids consisting of nucleic acids comprising natural bases or non-natural bases, nucleic acids capable of expressing proteins, peptides or polypeptides in cells, nucleic acids which inhibit undesired expression of nucleic acids in cells, nucleic acids which inhibit undesired enzymatic activity, nucleic acids which activate desired enzymes, and nucleic acids which catalyze reactions.
84. (New) The composition of claim 7, wherein said polyvalent cationic lipids are selected from the group consisting of DOSPA, DOSPER, DOGS, TMTPS, TMTOS, TMTLS, TMTMS, and TMDOS.
85. (New) The composition of claim 84, wherein said neutral lipids are selected from the group consisting of DOPE, DPhPE, and cholesterol.
86. (New) The composition of claim 12, wherein said polycationic lipids are polycationic ammonium lipids.
87. (New) The composition of claim 6, wherein said cationic lipids comprise saturated and unsaturated alkyl and alicyclic ethers and esters of amines, amides or derivatives thereof.
88. (New) The composition of claim 7, wherein said neutral lipids are selected from the group consisting of lecithins; phosphatidylethanolamine; phosphatidylethanolamines, DPhPE (diphytanoylphosphatidylethanolamine), DPPE, dipalmitoylphosphatidyl-ethanolamine, POPE; distearoylphosphatidylethanolamine, phosphatidylcholine, phosphatidylcholines, DPPC (dipalmitoylphosphatidylcholine), POPC (palmitoyl-oleoylphosphatidylcholine), distearoylphosphatidylcholine, phosphatidylglycerol, phosphatidylglycerols, DOPG (dioleoylphosphatidylglycerol), DPPG (dipalmitoylphosphatidyl-glycerol), distearoylphosphatidylglycerol, phosphatidylserine, phosphatidylserines, dioleoylphosphatidylserine, dipalmitoylphosphatidylserine, diphosphatidylglycerols, fatty acid esters, glycerol esters, sphingolipids, cardiolipin; cerebrosides, ceramides, cholesterol, 3 β OH-sterols and mixtures thereof.

89. (New) The composition of claim 1, wherein at least one of said one or more peptides or proteins is a herpes simplex virus VP22 protein or a fragment thereof.
90. (New) The composition of claim 89, wherein at least one of said one or more transfection agents is a polycationic lipid.
91. (New) The composition of claim 90, wherein said polycationic lipid is DOSPA.
92. (New) The composition of claim 90, further comprising a neutral lipid.
93. (New) A method for transfecting a cell with a nucleic acid, the method comprising the step of contacting the cell with the transfection composition of claim 89.